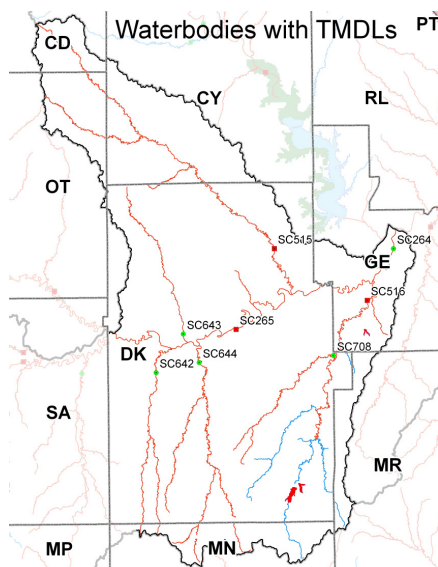
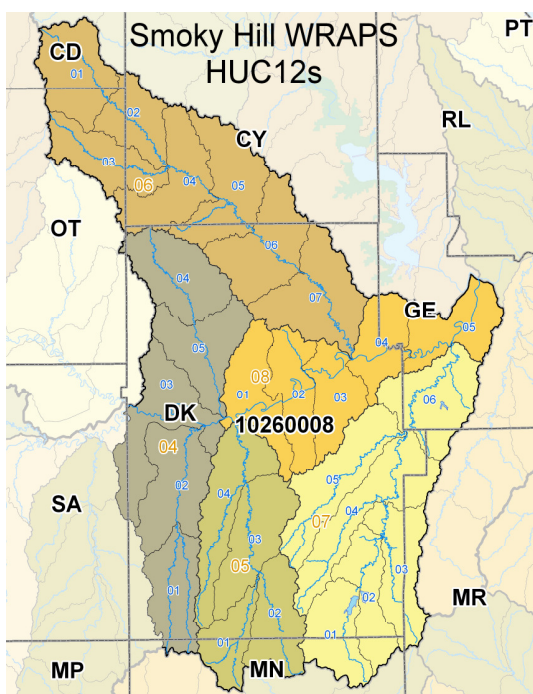


Lower Lower Smoky Hill WRAPS Impaired Waters 2009



The Watershed:

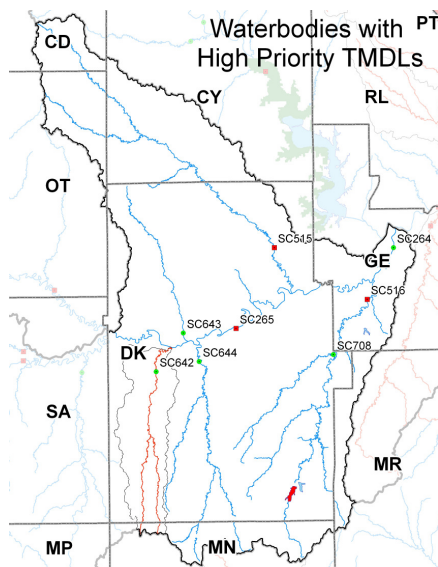
The lower portion of the Smoky Hill River, stretching from the Smoky Hill/Solomon River junction to the Smoky Hill/Republican junction, captures a drainage area of about 1,200 square miles, principally in Dickinson County, contained in the HUCs 10260008(04,05,06,07,08). Within the Lower-Lower Smoky Hill drainage there are 32 registered stream segments with a total stream-length of 470 miles. There are also four registered lakes, three Herrington lakes and Geary County State Fishing Lake.



TMDLs:

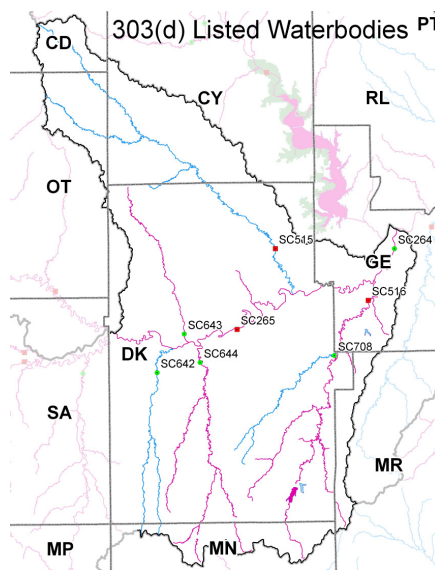
Every registered waterbody in the area is considered impaired and has at least one TMDL and/or 303(d) listing. The most common stream TMDLs are for sulfate (SO₄), which includes 24 streams in the area, and chloride, which includes 10 stream segments. These impairments occur primarily due to natural sources and are considered a low priority.

Holland Creek and its tributaries have a high priority TMDL for dissolved oxygen and the mainstem Smoky Hill River has a macroinvertebrate based TMDL. The four lakes each have TMDLs for eutrophication (excessive algal growth), Herrington Reservoir has a dissolved oxygen TMDL as well as an atrazine TMDL.

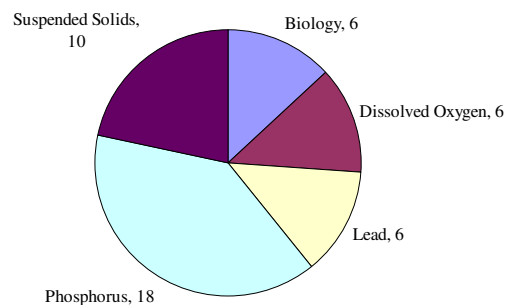


303(d) Listing:

303(d) listings (waterbodies needing a TMDL) are also pervasive throughout the area. Eighteen of the 32 stream segments are 303(d) listed for excessive phosphorus, 10 are listed for excessive suspended solids, and there are six streams listed each for low dissolved oxygen, poor macroinvertebrate diversity and excessive lead concentrations. Herrington Reservoir is also 303(d) listed for siltation.



2008 303(d) Listings



More information

Watershed Restoration and Protection

www.kswraps.org

Total Maximum Daily Loads

www.kdheks.gov/tmdl

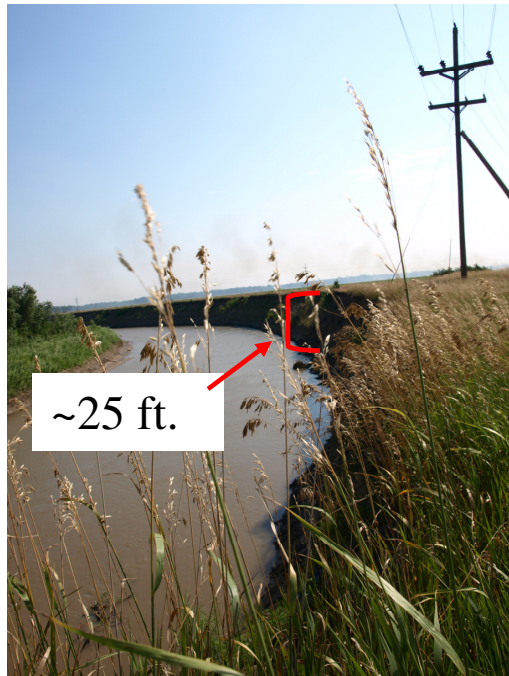
Kansas Water Quality

www.kdheks.gov/befs/water/quality_disclaimer.htm

TMDL Dictionary:

Eutrophication- The excessive growth of algae and related organisms in streams, rivers, lakes and ponds.

Unionid Mussel- Sometimes called freshwater clams, these long-lived species are considered good indicators of stream impairment because their shells typically can be found long after a pollution related stress has begun.



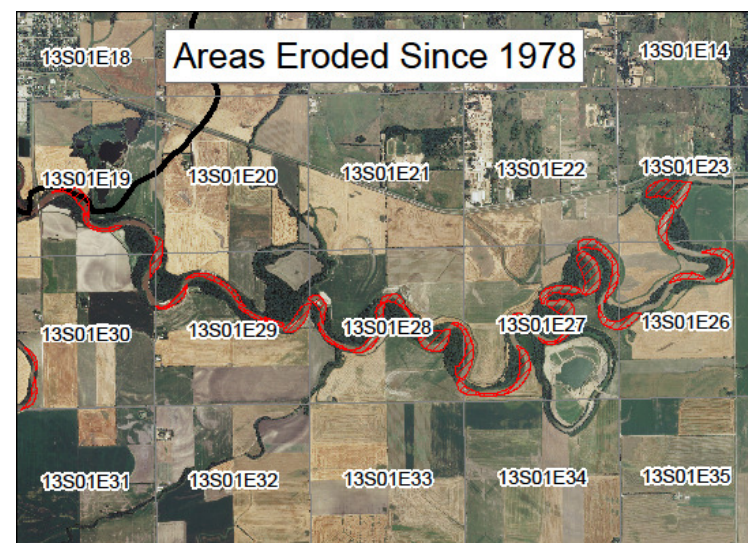
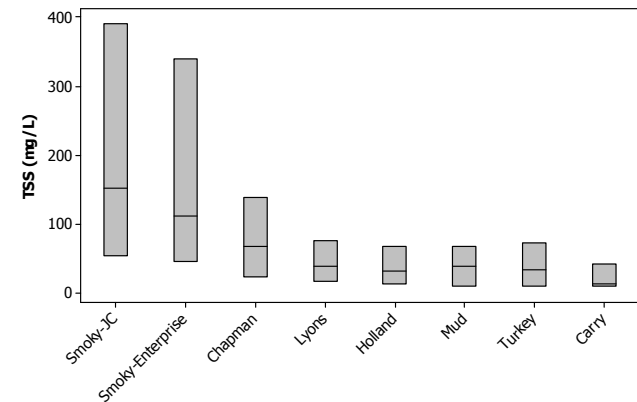
Suspended Sediment (TSS):

Bank erosion along the mainstem of the Smoky Hill River is a major pollution source that has not been fully addressed. In many areas the river banks are shear, with vertical heights of as much as 30 ft. Sediment carried from the banks contributes to the greatest concentrations of suspended solids anywhere in Kansas.

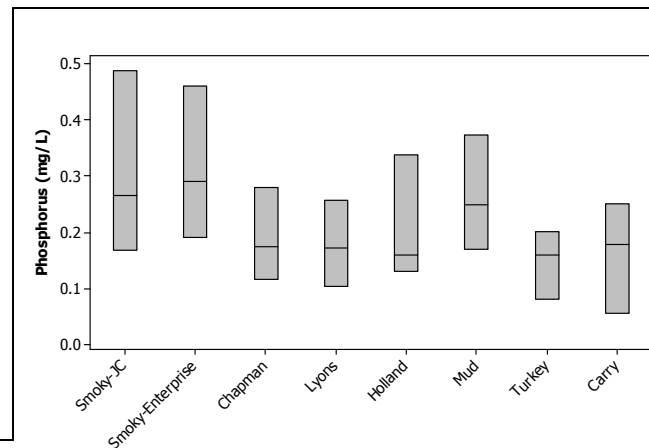
Sediment concentrations in the tributary streams are also elevated, but the Smoky Hill River is uniquely impacted. Historical accounts describe the river as a sandy bottom stream with a forested riparian zone.



Native unionid mussels have been severely impacted, resulting in a loss of three-quarters of the historically present species near Junction City. One major factor in the loss of these mussels is the deposition of silt on the top of the sand and gravel still present in the river, see photo at left.



Species	Scientific Name	Current Status Locally	Current Status Statewide	SINC	Nearest Recent Live Specimen	Habitat
Fragile Papershell	<i>Leptodea fragilis</i>	common	declining	N/A	Present	mud, sand, gravel
Pink Papershell	<i>Potamilus ohioensis</i>	common	stable	N/A	Present	mud, sand, gravel
Mapleleaf	<i>Quadrula quadrula</i>	rare	declining	N/A	Present	mud, sand, gravel
Creepers	<i>Strophitus undulatus</i>	exceedingly rare	declining	SINC	Present	mud, sand, gravel
Threeridge	<i>Amblema plicata</i>	extirpated	declining	N/A	Clarks Creek, Geary County	mud, sand, gravel
Wabash Pigtoe	<i>Fusconaia flava</i>	extirpated	declining	SINC	Clarks Creek, Geary County	mud, sand, gravel
Fatmucket	<i>Lampsilis siliquoidea</i>	extirpated	declining	SINC	Vermillion Creek, Pottawatomie County	mud, sand, gravel
Yellow Sandshell	<i>Lampsilis teres</i>	extirpated	declining	SINC	Solomon River, Ottawa County	sand, fine gravel
Black Sandshell	<i>Ligumia recta</i>	extirpated	nearly extirpated	Missouri SINC	Marais des Cygnes River, Linn County	sand, gravel
Pondmussel	<i>Ligumia subrostrata</i>	extirpated	declining	N/A	Clarks Creek, Geary County	mud, sand
Threehorn Wartyback	<i>Obliquaria reflexa</i>	extirpated	declining	N/A	Cottonwood River, Marion County	sand, gravel
Hickorynut	<i>Obovaria olivaria</i>	extirpated	extirpated	N/A	Missouri	sand, gravel
Pink Heelsplitter	<i>Potamilus alatus</i>	extirpated	declining	N/A	Lyon Creek, Geary County	mud, sand, gravel
Pimpleback	<i>Quadrula pustulosa</i>	extirpated	declining	N/A	Smoky Hill River, Saline County	mud, sand, gravel
Pistolgrip	<i>Tritogonia verrucosa</i>	extirpated	declining	N/A	Vermillion Creek, Pottawatomie County	mud, sand, gravel
Fawnsfoot	<i>Truncilla donaciformis</i>	extirpated	declining	SINC	Cottonwood River, Marion County	sand, gravel



Phosphorus:

Phosphorus, along with nitrogen, is a nutrient essential to the growth of both plants and algae. Excessive concentrations of nutrients in streams and lakes results in a characteristic green cast as algae grow. Although people generally think of green plants, and algae, as generating oxygen, they also consume oxygen during nighttime darkness. As a result excessive algal growth is not only unsightly, it can contribute to degraded conditions for other aquatic species, like fish and mussels.

More than half of all the streams in the Lower Lower Smoky Hill WRAPS area have 303(d) listings for phosphorus, which contributes to stream conditions like those seen on the right.

Reductions in crop growing activities within 100 ft. of a stream are strongly associated with reduced phosphorus concentrations, less algae, and better overall water quality.

